

ONTARIO MINISTRY OF ENVIRONMENT



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1967

PORT ARTHUR

**water pollution
control plant**

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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Port Arthur : water pollution
control plant.

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Local Advisory Committee,
City of Port Arthur.

Gentlemen:

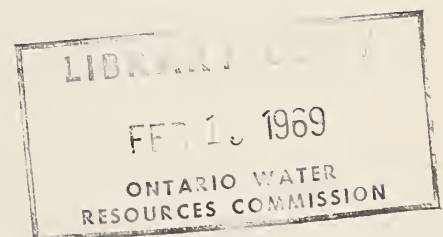
We are happy to present you with the 1967 Operating Summary for the Port Arthur Water Pollution Control Plant, OWRC Project Nos. 2-0013-58, 2-0101-62 and 2-0156-63.


Your co-operation with our staff throughout the year has been appreciated. Only with such co-operation can the war against water pollution be waged effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly".

D. S. Caverly,
General Manager.





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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Port Arthur Water Pollution Control Plant, OWRC Project Nos. 2-0013-58, 2-0101-62 and 2-0156-63.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in dark ink, reading "D. A. McTavish". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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PORT ARTHUR

water pollution control plant

operated for

THE CITY OF PORT ARTHUR

by the

ONTARIO WATER RESOURCES COMMISSION

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DIVISION OF PLANT OPERATIONS

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Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: A. Clark

801 Bay Street Toronto 5

'67 REVIEW

During the year 1813.46 million gallons were treated at a total expenditure of \$56,202.44. The cost of \$30.99 per million gallons is an increase of 14% compared to 1966.

The increased costs reflect higher sludge hauling prices and increased staff payroll. Average removal efficiencies of 44.8% BOD and 55.6% for suspended solids were achieved for the year.

The plant was under 16-hour daily supervision, seven days a week, by a staff consisting of a Chief Operator and three plant operators. Use is also made of casual labour. Regular inspections were made by the Operations Engineer and the Technical Services Section of the Division of Plant Operations.

PROJECT COSTS

NET CAPITAL COST:	2-0013-58 (Final)	\$2,157,635.72
	2-0101-62 (Final)	699,693.96
	2-0156-63 (Estimated)	610,181.87
		\$3,467,511.55

DEDUCT: Portion Financed by CMHC-		
	2-0101-62	\$457,785.36
	2-0156-63	393,042.83
Payments from Municipalities-		
	2-0013-58	957.79
		851,785.98

Long Term Debt to OWRC	\$2,615,725.57
------------------------	----------------

Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967:

2-0013-58	\$433,938.82	
2-0101-62	23,130.81	
2-0156-63	14,059.68	\$ <u>471,129.31</u>

	<u>2-0013-58</u>	<u>2-0101-62</u>	<u>2-0156-63</u>	<u>TOTAL</u>
Net Operating	\$ 56,202.44	\$ -	\$ -	\$ 56,202.44
Debt Retirement	43,523.00	4,882.00	4,426.00	52,831.00
Reserve	9,311.69	4,226.31	2,574.15	16,112.15
Interest Charged	121,623.67	13,642.07	12,245.20	147,510.94
TOTAL	\$ <u>230,660.80</u>	\$ <u>22,750.38</u>	\$ <u>19,245.35</u>	\$ <u>272,656.53</u>

RESERVE ACCOUNT

	<u>2-0013-58</u>	<u>2-0101-62C</u>	<u>2-0156-63</u>	<u>TOTAL</u>
Balance at January 1, 1967	\$113,832.24	\$17,427.69	\$5,798.85	\$137,058.78
Deposited by Municipality	9,311.69	4,226.31	2,574.15	16,112.15
Interest Earned	6,587.89	1,081.95	386.24	8,056.08
	<u>\$129,731.82</u>	<u>\$22,735.95</u>	<u>\$8,759.24</u>	<u>\$161,227.01</u>
Less Expenditures	<u>4,795.43</u>	<u>-</u>	<u>-</u>	<u>4,795.43</u>
Balance at December 31, 1967	<u>\$124,936.39</u>	<u>\$22,735.95</u>	<u>\$8,759.24</u>	<u>\$156,431.58</u>

MONTHLY OPERATING COSTS

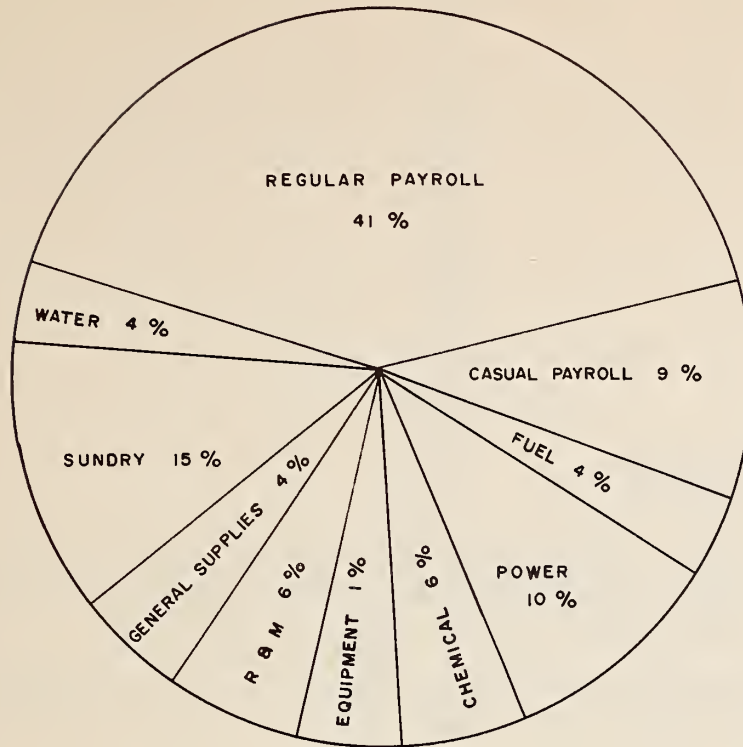
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	2,724.28	1,273.02	297.33	206.67	471.89		128.00		4.20		343.17
FEB	3,432.03	1,607.06	278.88	211.39	447.57		112.54		116.57	658.02	
MARCH	4,495.73	2,846.21	501.01	211.89	424.19		210.51	80.28	76.54	145.10	
APRIL	4,355.80	1,782.24	361.26		481.90	62.16	102.25		111.40	1167.90	286.69
MAY	4,387.07	2,038.53	492.61	137.13	509.16	911.70	113.75		37.67	146.52	
JUNE	7,101.38	1,782.24	242.94	385.63	480.03		218.36		747.22	3244.96	
JULY	4,439.34	1,800.60	867.14	151.65	461.40		142.61		334.40	210.28	471.26
AUG	4,949.33	1,740.17	633.14	139.39	414.73	1550.85	181.69		219.44	69.92	
SEPT	4,751.47	2,729.17	757.87	136.09					1111.92	16.42	
OCT	6,454.32	1,834.22	352.98	151.05	895.01	602.70	829.65		183.70	1004.15	600.86
NOV	4,110.12	1,834.22	361.26		470.85		280.81		270.05	892.93	
DEC	5,001.57	1,828.75	246.15	369.75	456.06		296.81	550.71	32.28	830.93	390.15
TOTAL	56,202.44	23,096.43	5,392.57	2100.62	5512.79	3127.41	2616.98	630.99	3245.39	8387.13	2092.13

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$6,407.50

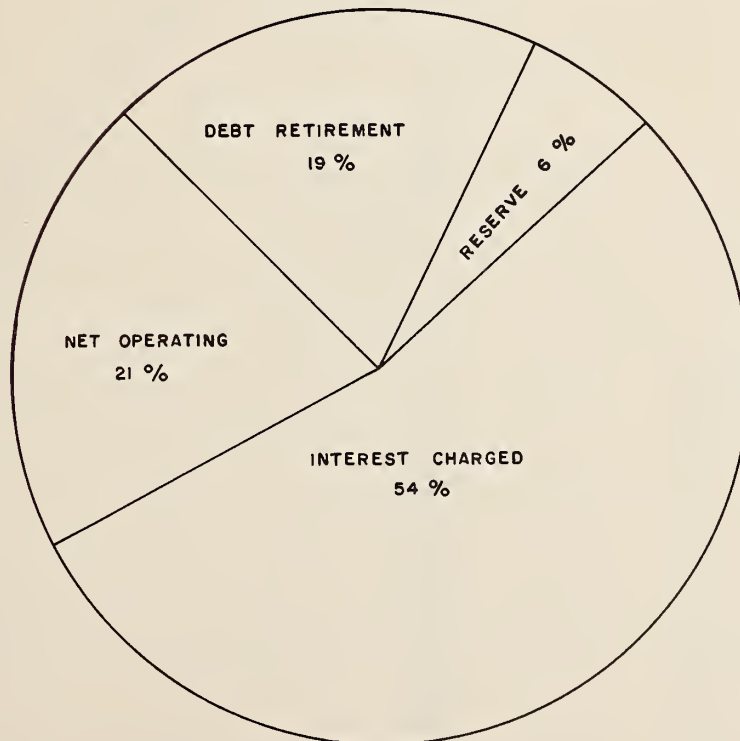
YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1961	840.41	\$29,861.94	\$35.52	3 CENTS
1962	885.49	\$31,781.54	\$35.89	4 CENTS
1963	1063.67	\$32,700.58	\$34.74	3 CENTS
1964	1648.94	\$45,374.87	\$27.52	4 CENTS
1965	1883.74	\$44,533.19	\$23.64	3 CENTS
1966	1825.52	\$49,656.84	\$27.20	3 CENTS
1967	1813.46	\$56,202.44	\$30.99	5 CENTS

1967 OPERATING COSTS



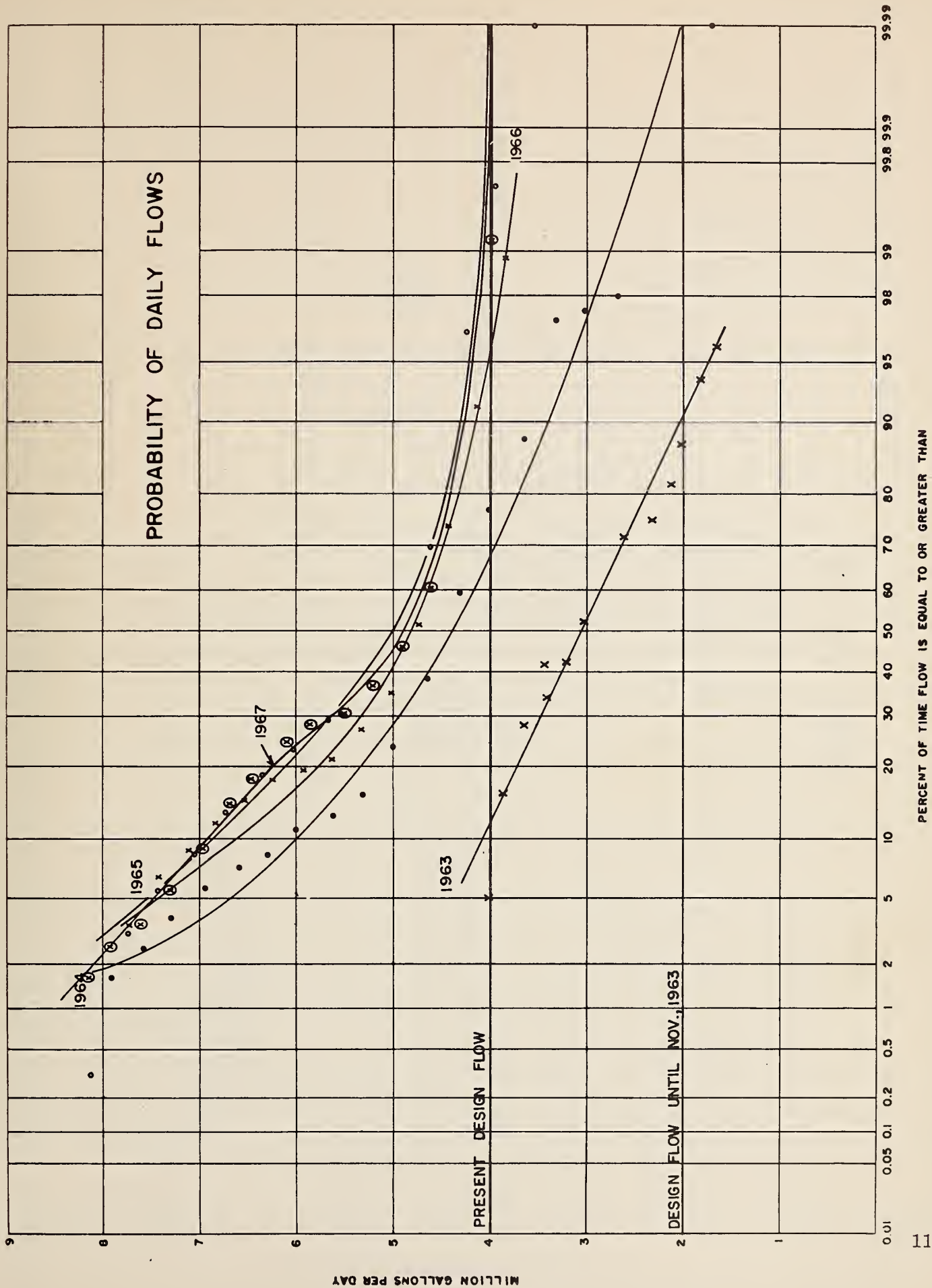
TOTAL ANNUAL COST

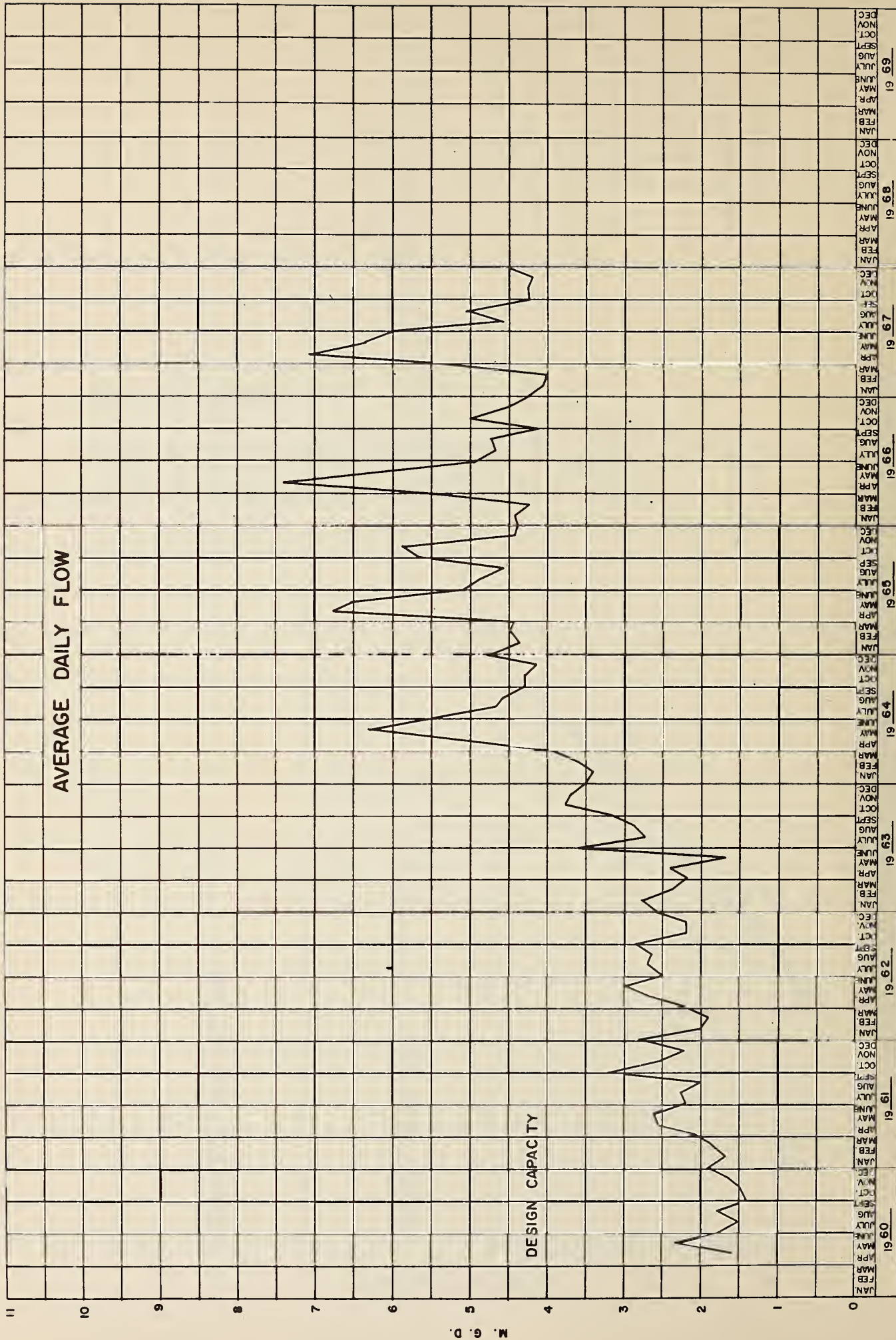


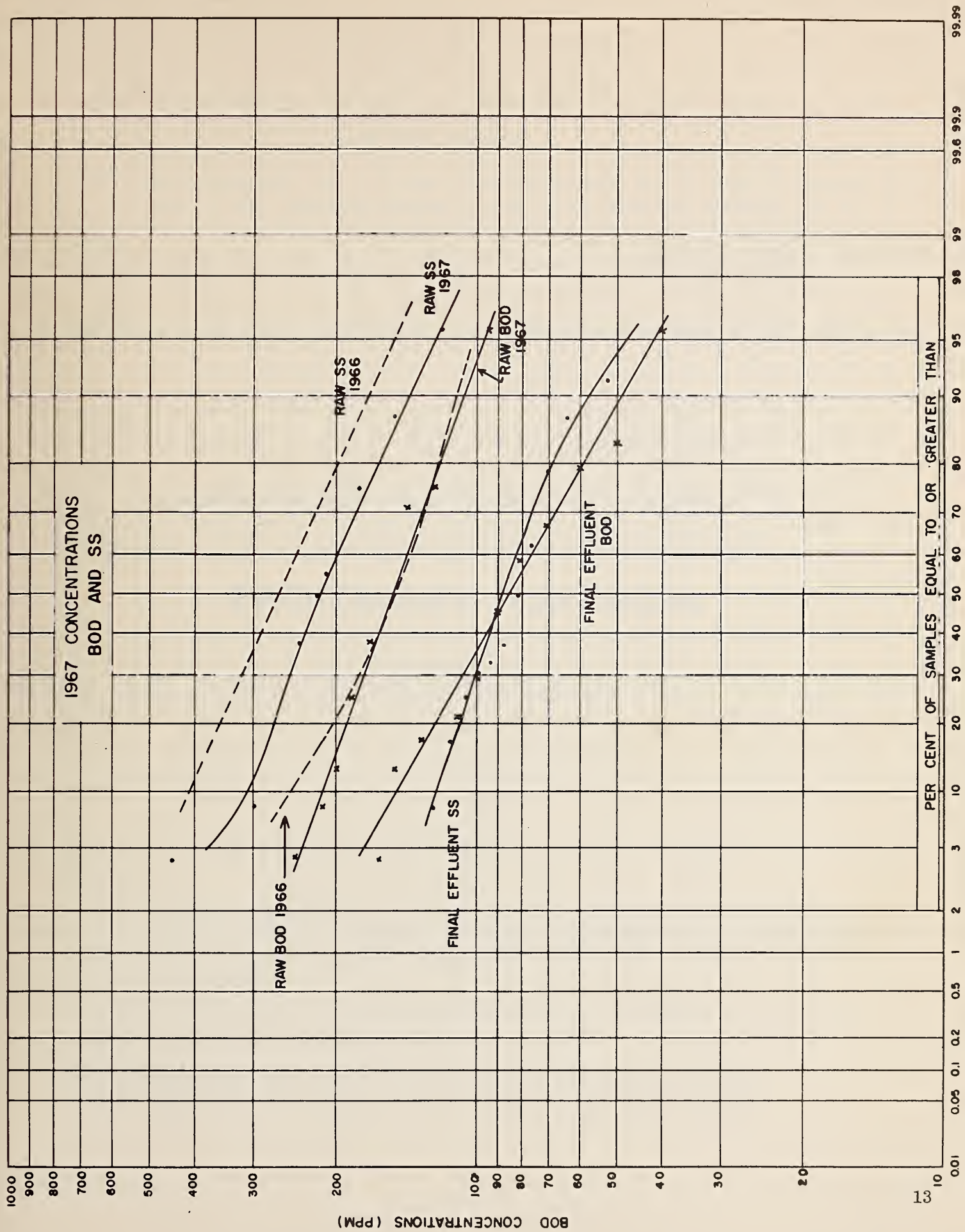
Process Data

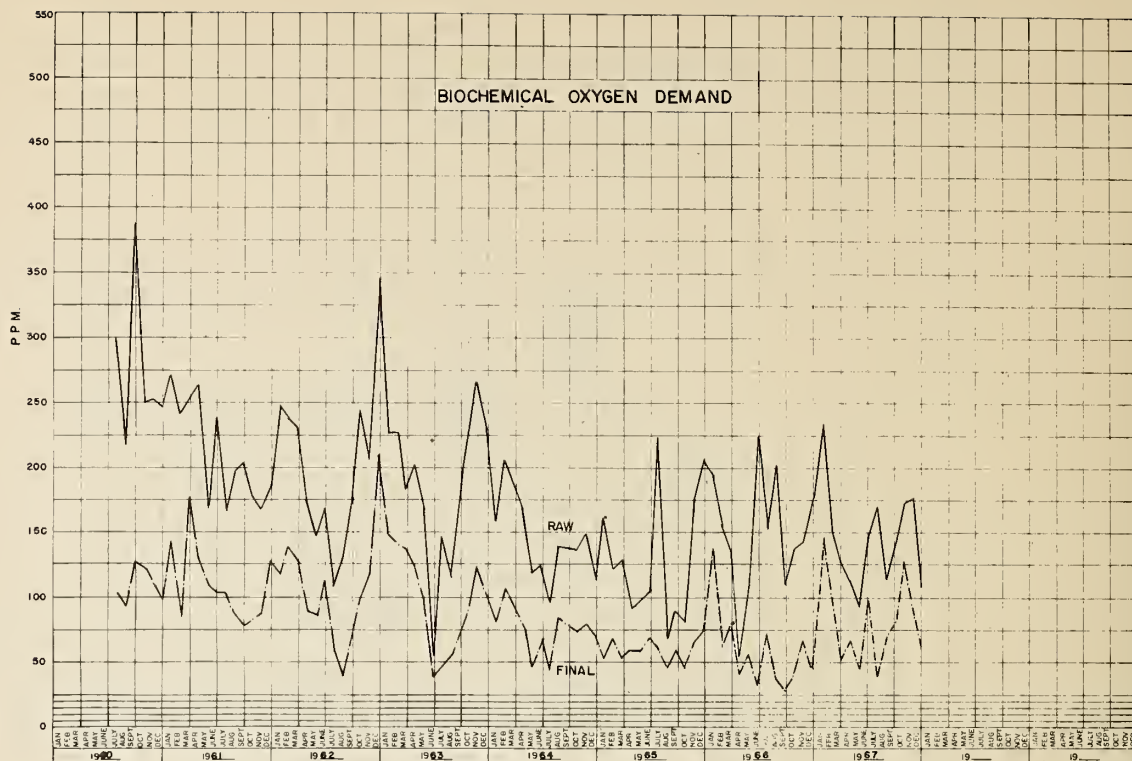
A total of 1813.46 million gallons was treated during the year for an average daily flow of 5 million gallons. This is a decrease of less than 1% from the 1966 flow and 3.7% less than the 1965 total flow.

The probability of flows graph shows that the flow to the plant exceeded design capacity 100% of the time.

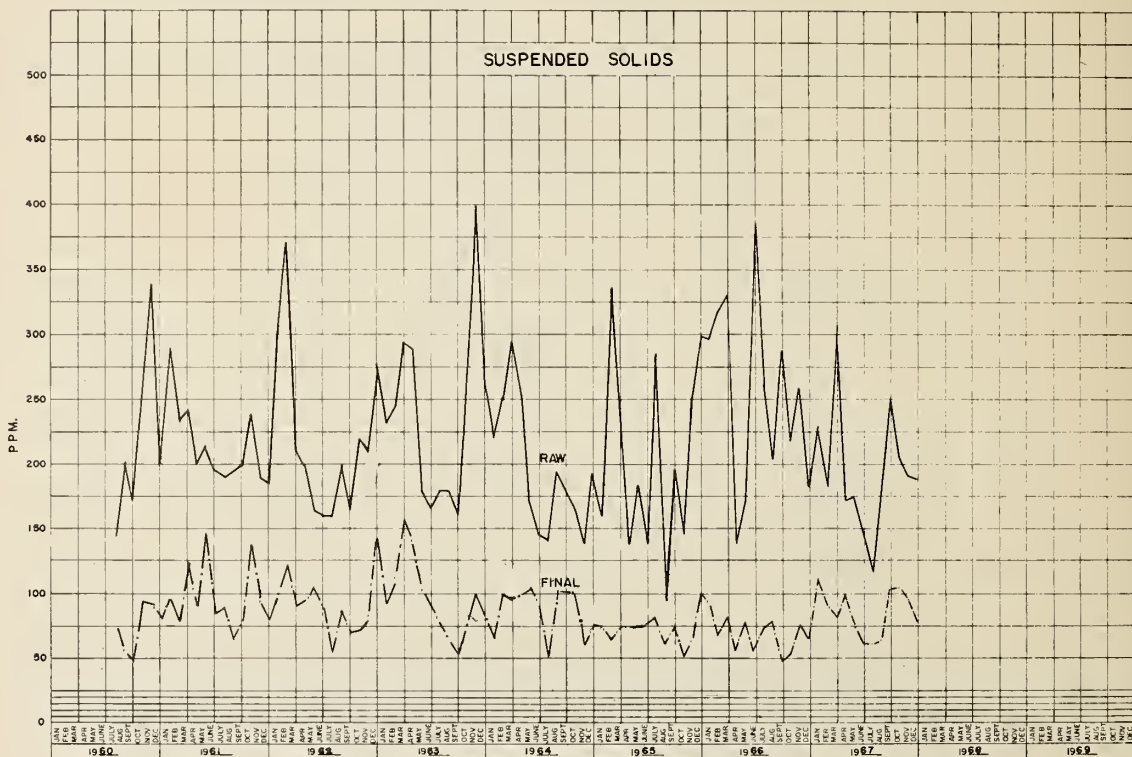








MONTHLY VARIATIONS



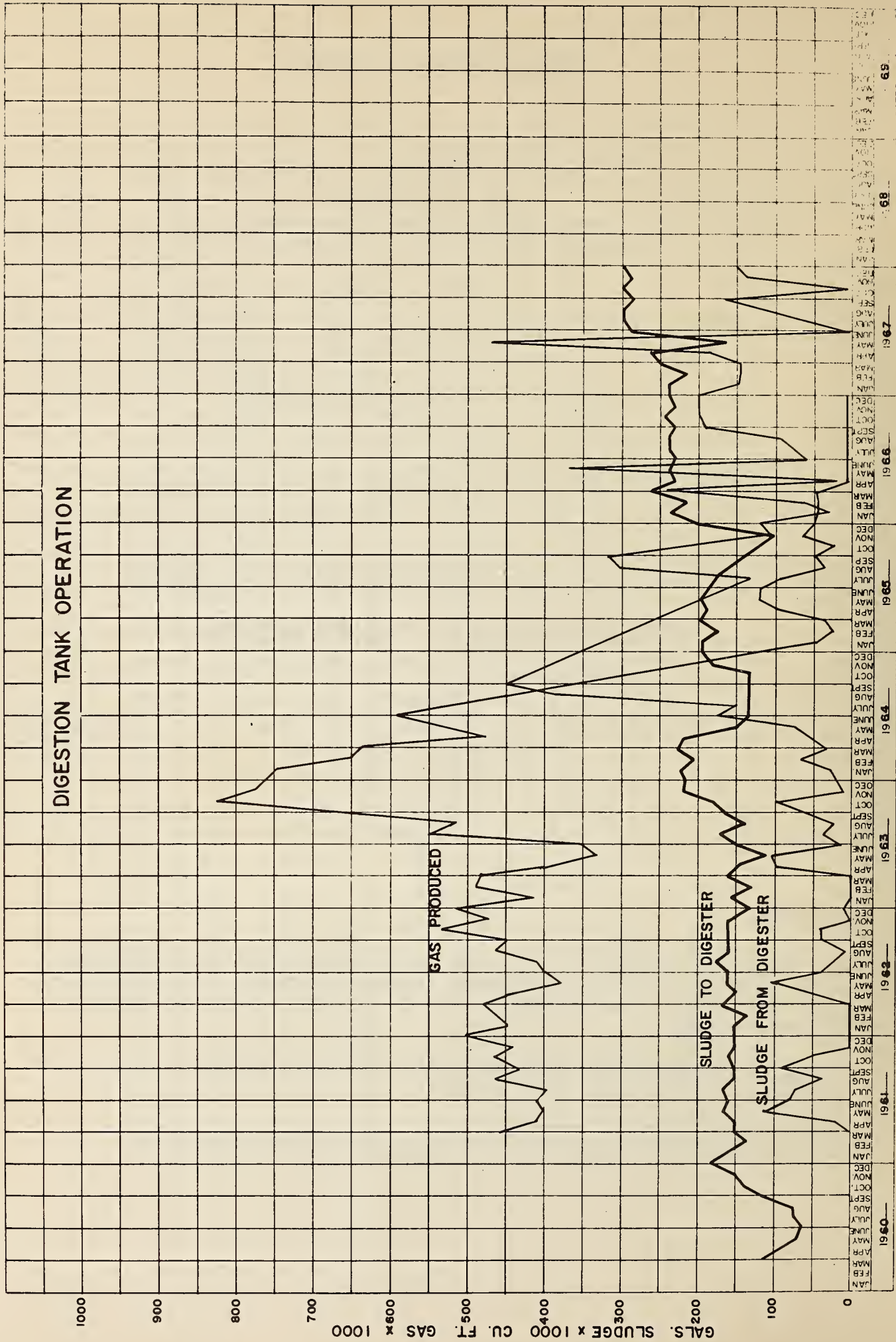
GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	233	146	37.3	54.53	228	110	51.7	73.96	141
FEB.	150	96	36.0	30.31	181	90	50.3	51.07	95
MAR.	125	52	58.4	60.78	295	80	72.9	179.02	75.5
APR.	112	66	41.1	48.52	170	97	42.9	77.01	85
MAY	94	45	52.1	48.30	172	73	57.6	97.58	59
JUNE	148	96	35.1	46.81	145	60	58.6	76.52	79
JULY	170	38	77.6	92.83	116	60	48.3	39.38	45
AUG.	114	68	40.4	35.92	184	62	66.3	95.27	91
SEPT.	143	80	44.0	40.26	249	101	59.4	94.58	72
OCT.	172	126	26.7	30.12	204	102	50.0	66.80	120
NOV.	177	89	49.7	55.87	189	94	50.3	60.31	120
DEC.	95	58	38.9	25.63	186	76	59.1	76.21	199
TOTAL	-	-	-	569.88	-	-	-	987.71	1181.5
AVG.	144	80	44.8	47.49	193	84	55.6	82.30	98

COMMENTS

The average raw sewage BOD was 144 ppm and the effluent BOD was 80 ppm, resulting in a reduction of 44.8%. The suspended solids were reduced 55.6% from 193 ppm to 84 ppm. These reductions are in the range normally expected for this form of primary treatment.

A total of 1181.5 cubic feet of grit was removed, for an average of 0.65 cubic feet of grit removed per million gallons treated.



DIGESTER OPERATION

Month	Sludge to Digesters	Sludge from Digesters
	1000's Gallons	1000's Gallons
January	238.080	150.114
February	215.040	148.263
March	249.600	148.263
April	261.420	183.474
May	163.200	467.027
June	288.000	-
July	298.200	-
August	298.200	-
September	288.000	164.941
October	297.600	-
November	288.000	131.582
December	297.600	14.826
Total	3,182.940	1,408.490
Average	265.245	176.061

COMMENTS

The total amount of sludge pumped to the digesters was 3,182,940 gallons. Liquid digested sludge was hauled regularly throughout the year and 1,408,490 gallons were removed. The digester was emptied for cleaning and repair during May.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	125.36	-	-
FEBRUARY	112.24	-	-
MARCH	166.53	-	-
APRIL	210.98	-	-
MAY	197.14	* 3050	2.82
JUNE	180.05	5730	3.18
JULY	140.66	4920	3.50
AUGUST	156.18	6000	3.84
SEPTEMBER	127.81	6400	5.01
OCTOBER	130.98	5000	3.82
NOVEMBER	126.97	-	-
DECEMBER	138.56	-	-
TOTAL	1813.46	31100	-
AVERAGE	151.12	5183	3.69

* Chlorination for 17 days.

COMMENTS

Chlorination of the final effluent commenced May 15 and continued to October 30. A chlorine residual of 0.5 ppm after a 15-minute contact period is maintained. Chlorine consumption for the year was 31,100 lbs. at an average dosage rate of 3.69 ppm.

RECOMMENDATIONS

High flows continue to tax the present facilities and reduce the operational efficiency of the digester.

Enlargement of the present treatment facilities should be considered immediately.

